

Claims:

1. A laser arrangement (1) comprising a pump unit (2) containing a pumped laser crystal (3), and further comprising means (15) for passive mode-locking, characterized in that two separate, alternatively switchable resonator arms (11, 12) are provided, one resonator arm (11) of which, which is active in a pulse forming phase (21), comprises the means (15) for passive mode-locking, whereas the other resonator arm (12), which is active in an amplifying phase (22), is free from components that introduce losses.

2. A laser arrangement according to claim 1, characterized in that at least one polarization-sensitive beam divider (10) as well as a polarization rotating means (8) is provided for switching between the two resonator arms (11, 12).

3. A laser arrangement according to claim 2, characterized in that the polarization rotating means (8) is formed by a Pockels cell.

4. A laser arrangement according to claim 2 or 3, characterized in that a respective polarization-sensitive beam divider (10, 5) is provided in the path of the laser beam (6) on both sides of the polarization

rotating means (8).

5. A laser arrangement according to claim 4, characterized in that on the side of the polarization-rotating means (8) opposite to the means (15) for passive mode-locking, the polarization-sensitive beam divider (5) simultaneously forms a laser beam-outcoupling element.

6. A laser arrangement according to any one of claims 1 to 5, characterized in that the means for passive mode-locking is a saturable absorber (15).

7. A laser arrangement according to claim 6, characterized in that the saturable absorber (15) is a saturable semiconductor absorber.

8. A laser arrangement according to claim 6 or 7, characterized in that the saturable absorber (15) is an absorber mirror terminating the one resonator arm (11).

9. A laser arrangement according to any one of claims 1 to 8, characterized in that in the one resonator arm (11) which is active in the pulse forming phase (21), a linear loss element, e.g. a $\lambda/4$ platelet (13), is arranged which provides for a high energy accumulation in the laser crystal (3).

10. A laser arrangement according to any one of claims 2 to 9, characterized in that the pump unit (2) is a continuous wave diode pump unit forming, in combination with the polarization rotating means (8), a resonator part (20) common to both resonator arms (11, 12).

11. A laser arrangement according to any one of claims 2 to 10, characterized in that the pump unit (2) is lamp-pumped or laser-pumped, forming, in combination with the polarization rotating means (8), a resonator part (20) common to both resonator arms (11, 12).

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